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10/540,907	06/27/2005	Nobuo Ando	03702/0203076-US0	3398
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EXAMINER				
CANTELMO, GREGG				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/540,907

Applicant(s)

ANDO ET AL.

Examiner

Gregg Cantelmo

Art Unit

1795

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 14-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 19 and 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/GS/US)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. In response to the amendment received February 26, 2010:
 - a. Claims 1-20 are pending with claims 14-18 withdrawn from consideration as to non-elected invention;
 - b. The claim objection is withdrawn in light of the amendment to claim 19;
 - c. The prior art rejections to Ando and Ando '769, as respective primary references, stand.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1-2, 4, 6-10, 12-13 and 19-20 remain rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,862,168 (Ando) in view of Murai and Ando '769.

Ando discloses a electrical storage device comprising: a positive electrode 1, a negative electrode 2, a lithium electrode 4 and an electrolyte capable of transferring lithium ions, wherein the lithium electrode 4 is arranged on an end with the negative electrode 2 (Fig. 1) and wherein lithium ions can be supplied to the negative electrode and/or the positive electrode by flowing current between the lithium electrode and the negative electrode and/or the positive electrode through an external circuit which connects the lithium electrode terminal with the negative electrode terminal and/or the positive electrode terminal. A positive electrode terminal is provided on the positive

electrode, a negative electrode terminal is provided on the negative electrode, and a lithium electrode terminal is provided on the lithium electrode, the positive electrode terminal, the negative electrode terminal and the lithium electrode terminal include portions located at an outer portion of the electrical storage device. Each of the positive electrode, negative electrode and lithium electrode are provided on respective current collectors 1', 2' and 4', respectively (Figs. 6 as applied to claim 1).

It is apparent that the current collectors of Ando include protrusions as shown in Fig. 1. These current collectors are disclosed such that they can be directly welded to terminals without providing the conductor 5' (see col. 9, ll. 48-63). Therefore the protruding portions of the current collectors for the positive electrode, negative electrode and lithium electrode can be directly welded to a respective terminal where the terminal would extend to the outside of the battery casing (as applied to claim 1).

The electrolyte is an aprotic organic solvent solution of a lithium salt (abstract as applied to claim 2).

The lithium current collector is porous and has lithium deposited in the pores (col. 15, ll. 6-12 as applied to claim 4).

The bottom of the lithium electrode as shown in Figs. 3 and 5 is designed such that it faces the top portion of the positive and negative electrodes (as applied to claim 6).

The electrodes can be stacked in multiple layers as shown in Fig. 1 (as applied to claim 7) or can be rolled (Figs. 4-6 as applied to claim 8).

The device is a capacitor (abstract as applied to claim 9).

The electrodes are selected materials which reversibly carry lithium ions and/or anions and the electrostatic capacitance per unit weight of the negative electrode to the positive electrodes is at a ratio of at least 3:1 (negative electrode to positive electrode) with the positive electrode having a larger weight than the negative electrode (see table 8 as applied to claim 10).

Regarding claim 12, claim 12 is held to define an operational condition applied to the device. It does not clearly further define the product apart from that disclosed in Ando and fails to define the conditions for supplying the lithium ions. Since the prior art apparatus is capable of supplying lithium ions to the electric storage device, the prior art is inherently capable having some amount of lithium remaining after lithium is supplied, depending on the conditions for supplying (as applied to claim 12).

The device is used in an electronic apparatus and thus teaches of the combination as recited in claim 13.

The lithium electrode comprises two plate electrodes about a common current collector 4' and is provided in the center of the rolled stack unit (Figs. 3 and 5 as applied to claim 19).

The lithium electrode and collector can alternatively be provided as a roll around the rolled electrode stack unit (Fig. 4 as applied to claim 20).

Ando does not teach of the lithium electrode being arranged to be out of direct contact with the negative electrode (claim 1) or of portions of respective terminals located outside the container and welded to respective protrusions of each current collector(claim 1), of the electrodes having pores in the current collectors (claim 3) or of

the negative electrode material being an insoluble and infusible base having a polyacene-based structure with a H/C ratio of 0.50 to 0.05 (claim 11).

Regarding the lithium electrode being arranged to be out of direct contact with the negative electrode:

Murai teaches of a lithium ion cell wherein an auxiliary source of lithium is provided in the cell but is kept out of direct contact with the positive and negative electrodes (abstract and Figs. 1-3). Murai teaches that it is desired to keep the lithium metal out of direct contact with the electrodes or the electrolyte (abstract). This obviously prevents the formation of reaction products between the electrodes and electrolyte and the highly reactive lithium metal.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Ando by physically isolating the lithium metal source as suggested by Murai since it would have prevented for formation of a reaction compound between the anode and the highly reactive supplemental lithium and would have improved the capacity of the electrochemical device (para. 12).

In providing a configuration taught by Murai wherein a lithium supplemental source is provided in the lithium electrochemical device but not in contact with the electrodes or electrolyte inside the cell, it would further have been obvious then to provide terminals for all of the electrodes to include portions which are located outside of the container as taught by Murai in order to effectively provide the necessary

supplemental lithium from the supplemental electrode 11 to the electrochemical electrodes of the lithium electrochemical device.

Regarding the current collectors having protrusions which are welded to respective terminals:

Its is also recognized in the art to provide the current collectors in this configuration with protruding portions as taught by Ando '769 (Fig. 1). These current collectors are disclosed such that they can be directly welded to terminals without providing the conductor 5' (see col. 9, ll. 48-63). Therefore the protruding portions of the current collectors for the positive electrode, negative electrode and lithium electrode can be directly welded to a respective terminal where the terminal would extend to the outside of the battery casing (as applied to claim 1).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Ando by providing the current collectors with protruding portions and welding the protrusions with respective terminals as suggested by Ando '769 since it would have provided an equivalent configuration for moving current from the internal electrochemical cell components within the cell housing to the external load through respective cell housing terminals.

Regarding the formation of pores in the current collectors (claim 3):

Ando '769 discloses configuring the current collectors to have pores therein (see col. 2, ll. 47-61 and paragraph bridging columns 6 and 7).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Ando by forming pores in

the current collectors as taught by Ando '769 since it would have provided a configuration which enables free transfer of lithium ions within the cell.

Regarding the negative electrode material of claim 11:

Ando '769 further teaches that such a material is an art-recognized negative electrode material in lithium ion devices (see col. 1, ll. 47-65 and col. 3, ll. 42-51).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Ando by modifying the negative electrode active material to that taught in Ando '769 since such materials are art-recognized materials for reversibly carrying lithium and since the particular material of Ando '769 can reversibly carry a greater amount of lithium and thus has a higher lithium capacity as compared to other materials. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945) See also *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). MPEP § 2144.07.

3. Claim 5 remains rejected under 35 U.S.C. 103(a) as being unpatentable over Ando in view of Murai and Ando '769 as applied to claim 1 above, and further in view of U.S. Patent No. 6,653,018 (Takahashi) or U.S. Patent No. 6,576,365 (Meitav).

The difference not yet discussed is of the housing being a laminate structure.

Laminate housings for lithium-based electrical storage devices are extremely well noted in the art as shown by Takahashi or Meitav (col. 4, ll. 27-37).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Ando by encasing the electric storage device in a laminate housing since such configurations are notoriously well known in the art and can provide a casing having sufficient moldability, heat-resistance, insulation, mechanical strength and sealability. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945) See also *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). MPEP § 2144.07.

4. Claims 1-4 and 6-13 remain rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. Ando '769 in view of JP 08-190934 (Honbou) or Murai.

Ando discloses a electrical storage device comprising: a positive electrode 1, a negative electrode 2, a lithium electrode 4 and an electrolyte capable of transferring lithium ions, wherein the lithium electrode 4 is arranged on an end with the negative electrode 2 (Fig. 1) and wherein lithium ions can be supplied to the negative electrode and/or the positive electrode by flowing current between the lithium electrode and the negative electrode and/or the positive electrode through an external circuit which connects the lithium electrode terminal with the negative electrode terminal and/or the positive electrode terminal. A positive electrode terminal is provided on the positive electrode, a negative electrode terminal is provided on the negative electrode, and a lithium electrode terminal is provided on the lithium electrode, the positive electrode

terminal, the negative electrode terminal include portions located at an outer portion of the electrical storage device (Fig. 1 as applied to claim 1). It is also recognized in the art to provide the current collectors in this configuration with protruding portions as taught by Ando '769 (Fig. 1). These current collectors are disclosed such that they can be directly welded to terminals without providing the conductor 5' (see col. 9, ll. 48-63). Therefore the protruding portions of the current collectors for the positive electrode, negative electrode and lithium electrode can be directly welded to a respective terminal where the terminal would extend to the outside of the battery casing (as applied to claim 1).

The electrolyte is an aprotic organic solvent solution of a lithium salt (abstract as applied to claim 2).

Ando '769 discloses configuring the current collectors to have pores therein (see col. 2, ll. 47-61 and paragraph bridging columns 6 and 7 as applied to claim 3).

The lithium current collector is porous mesh or expanded metal and thus has pores (col. 9, ll. 10-20 as applied to claim 4).

The lithium electrode faces the negative electrode (see Figs. as applied to claim 6).

The electrodes can be stacked in multiple layers as shown in Fig. 1 (as applied to claim 7) or can be rolled (Figs. 7-8 as applied to claim 8).

The device is a capacitor (abstract as applied to claim 9).

Ando '769 further teaches that such a material is an art-recognized negative electrode material in lithium ion devices (see col. 1, ll. 47-65 and col. 3, ll. 42-51 as applied to claim 11).

Regarding claim 12, claim 12 is held to define an operational condition applied to the device. It does not clearly further define the product apart from that disclosed in Ando and fails to define the conditions for supplying the lithium ions. Since the prior art apparatus is capable of supplying lithium ions to the electric storage device, the prior art is inherently capable having some amount of lithium remaining after lithium is supplied, depending on the conditions for supplying (as applied to claim 12).

The device is used in an electronic apparatus and thus teaches of the combination as recited in claim 13.

Ando '769 does not teach of portions of the terminals located outside the container (claim 1).

Regarding portions of the terminals being located outside of the container:

The concept of disposing the terminals outside a lithium cell is known in the art as shown by Honbou. The electrode terminals 34, 35 and the lithium terminal 36 are connected to an external circuit. Murai also teaches that the electrode terminals and lithium electrode can be designed such that the terminals extend to the outside of the lithium electrochemical device whereby the circuit for connecting the lithium electrode to the positive or negative electrodes of the cell. Such a configuration would have been readily obvious in light of the combination of teachings from the prior art and would have required only routine experimentation from one of ordinary skill in the art.

5. Claim 5 remains rejected under 35 U.S.C. 103(a) as being unpatentable over Ando '769 in view of either Honbou or Murai as applied to claim 1 above, and further in view of U.S. Patent No. 6,653,018 (Takahashi) or U.S. Patent No. 6,576,365 (Meitav).

The difference not yet discussed is of the housing being a laminate structure.

Laminate housings for lithium-based electrical storage devices are extremely well noted in the art as shown by Takahashi or Meitav (col. 4, ll. 27-37).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Ando '769 by encasing the electric storage device in a laminate housing since such configurations are notoriously well known in the art and can provide a casing having sufficient moldability, heat-resistance, insulation, mechanical strength and sealability. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945) See also *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). MPEP § 2144.07.

Response to Arguments

6. Applicant's arguments filed February 26, 2010 have been fully considered but they are not persuasive.

Applicant argues that amended independent claim 1 claims a positive electrode terminal that is welded to a protrusion of the positive electrode collector, a negative electrode terminal that is welded to a protrusion of the negative electrode collector provided on the negative electrode, and a lithium electrode terminal is that is welded to

a protrusion of the lithium electrode collector. Applicants respectfully submit that this claimed feature is neither disclosed or suggested by Ando '168 or Ando '769, or by any of the other cited references, and that the Graham requirements for finding amended independent claim 1 to be obvious are not met. See, e.g., MPEP § 2143(A).

The Examiner respectfully disagrees.

Applicant argues that the cited art, and Ando '168 nor Ando '769 in particular, does not teach of the following:

(a) a positive electrode terminal that is welded to a protrusion of the positive electrode collector,

(b) a negative electrode terminal that is welded to a protrusion of the negative electrode collector provided on the negative electrode, and

(c) a lithium electrode terminal is that is welded to a protrusion of the lithium electrode collector.

With respect to each of (a), (b) and (c) above, the Examiner maintains that the prior art of record, and Ando '168 and Ando '769 in particular, clearly teach/suggest these limitations.

According to Ando '168: It is apparent that the current collectors of Ando include protrusions as shown in Fig. 1. These current collectors are disclosed such that they can be directly welded to terminals without providing the conductor 5' (see col. 9, ll. 48-63). Therefore the protruding portions of the current collectors for the positive electrode, negative electrode and lithium electrode can be directly welded to a

respective terminal where the terminal would extend to the outside of the battery casing (as applied to claim 1).

According to Ando '769: Its is also recognized in the art to provide the current collectors in this configuration with protruding portions as taught by Ando '769 (Fig. 1). These current collectors are disclosed such that they can be directly welded to terminals without providing the conductor 5' (see col. 9, ll. 48-63). Therefore the protruding portions of the current collectors for the positive electrode, negative electrode and lithium electrode can be directly welded to a respective terminal where the terminal would extend to the outside of the battery casing (as applied to claim 1).

The Examiner has not only asserted that the prior art does teach/suggest elements (a), (b) and (c) above, but provides specific citation within these prior art references to support the Examiner's position.

Applicant argues further, that a person of ordinary skill in the art, upon reading each of the cited references, would not be motivated to combine the various elements of the known electrical storage devices in such a way as to obtain the claimed electrical storage device.

This argument is not persuasive since this assertion, in the absence of any rationale to support this assertion, lacks any reasoning as to why a person of ordinary skill in the art would not be motivated to combine various elements as argued. Therefore, in the absence of a rationale supporting Applicant's allegation, Applicant's position that person of ordinary skill in the art, upon reading each of the cited references, would not be motivated to combine the various elements of the known

electrical storage devices in such a way as to obtain the claimed electrical storage device, is construed only as Applicant's opinion.

Applicant argues that they are not required to point to each section of the cited art to prove that they do not contain the referenced components.

This was not necessarily the position of the prior response to arguments. Rather the position set forth is that the previous response makes allegations that the prior art doesn't teach certain aspects without providing evidence or rationale to support their assertions. It's no great reach to state that a reference does or does not teach a particular facet of a claimed invention, but it is of greater significance and persuasiveness to explain in some detail and with some evidence how the references are deficient. Merely stating the references fail to teach certain aspects in response to detailed actions which assert that they do or that they are obvious lack substantial persuasiveness to overcome the prior art rejections of record.

In the absence of any convincing evidence to support Applicant's allegation, this position cannot be persuasive.

Applicant argues further that the newly presented claim language wherein the lithium ions can be supplied to the electrode(s) "after assembling the electrical storage device" and "before charging the electrical storage device" is additionally not taught or suggested by the prior art of record.

This argument is not persuasive.

The claims are drawn to a device wherein lithium ions "can be supplied" in the manner recited in claim 1. The language thus only requires that the device can perform the claimed function of supplying the lithium as recited in the claims.

In each of Ando '168 and Ando '769, the lithium electrodes are electrically connected to either the anode or cathode via a conductive line. The configuration therein permits for the structure of either Ando '168 or Ando '769 to be capable of performing the functionality of claim 1 since the lithium electrode is disposed in an electrical circuit to either the anode or cathode and thus can be shorted to provide the same lithium supplementation as recited in the claims.

While intended use recitations and other types of functional language cannot be entirely disregarded. However, in apparatus, article, and composition claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); In re Otto, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963).

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). See also MPEP § 2114.

The manner of operating the device does not differentiate an apparatus claim from the prior art. A claim containing a "recitation with respect to the manner in which a

claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

Therefore, for at least these reasons, the rejections stand.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is 571-272-1283. The examiner can normally be reached on Monday to Thursday, 8:30-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Gregg Cantelmo/
Primary Examiner, Art Unit 1795